



Vocal handicap of dysphonic patients before and after group speech therapy

Desvantagem vocal de pacientes disfônicos pré e pós-terapia fonoaudiológica em grupo

Desventaja vocal de pacientes disfônicos pre y post-terapia fonoaudiológica en grupo

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Abstract

Introduction: Group therapy is seen as educational and potentially effective. Aim: To evaluate the vocal handicap of dysphonic patients before and after group speech therapy and associate the vocal handicap after the therapy with sex, professional use of voice and laryngeal diagnosis. **Methods:** This is an intervention study with 50 dysphonic patients of both sexes, with an average of 45.43 years. The Voice Handicap Index Protocol (VHI) was applied in the first and in the last meeting of the intervention. The therapy was performed in eight weekly meetings, focusing on eclectic approach. Descriptive and inferential statistics were performed from the Student t test in order to compare the times, Chi-square to assess the association between independent variables with the VHI Total post-therapy. **Results:** Most participants were women and did not make professional use of voice, with predominant patients with lesion in the membranous portion of the vocal fold. By comparing the VHI domains in the pre and post-therapy group, there is a decrease in the total scores and the emotional and functional domains of the instrument, but this reduction was not statistically significant. When the association was made between the VHI post-therapy total score and the variables: sex, professional use of voice and laryngeal diagnosis, it was observed that there was significance in all these associations. **Conclusion:** There was not significant reduction in the domains' values of VHI post-therapy group. This values' reduction was influenced by sex, professional use of voice and laryngeal diagnosis of patients.

Keywords: Voice; Dysphonia; Self-assessment; Speech therapy; Voice training; Group processes.

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Resumo

Introdução: A terapia em grupo é vista como educativa e potencialmente efetiva. **Objetivo:** Avaliar a desvantagem vocal pré e pós-terapia fonoaudiológica em grupo para pacientes disfônicos, bem como associar a desvantagem vocal pós-terapia às variáveis: sexo, uso profissional da voz e diagnóstico laringeo. **Material e Métodos:** Trata-se de uma pesquisa de intervenção com 50 pacientes disfônicos, de ambos os sexos, com média de 45,43 anos. O protocolo Índice de Desvantagem Vocal (IDV) foi aplicado no primeiro e no último encontro da intervenção. A terapia foi realizada em oito encontros semanais, tendo como foco a abordagem eclética. Realizou-se estatística descritiva e inferencial a partir do teste *t* de Student para comparar os momentos, e Qui-quadrado para verificar associação entre variáveis independentes com o IDV Total pós-terapia. **Resultados:** A maioria dos participantes era do sexo feminino e não fazia uso profissional da voz. Houve maior predomínio de pacientes com diagnóstico de lesão na porção membranosa da prega vocal. Ao comparar os domínios do IDV no momento pré e pós-terapia em grupo, nota-se uma diminuição dos escores totais e dos domínios emocional e orgânico do instrumento, porém esta redução não foi estaticamente significativa. Quando realizada associação entre o escore total IDV pós-terapia com as variáveis: sexo, uso profissional da voz e diagnóstico laringeo, observou-se significância em todas essas associações. **Conclusão:** Não houve redução significativa dos valores dos domínios do IDV pós-terapia em grupo. A diminuição desses valores mostrou-se influenciada pelo sexo, uso profissional da voz e diagnóstico laringeo dos pacientes.

Palavras-chaves: Voz; Disfonia; Autoavaliação; Fonoterapia; Treinamento da voz; Processos grupais.

Resumen

Introducción: La terapia en grupo es considerada como educativa y potencialmente efectiva. **Objetivo:** Evaluar la desventaja vocal pre y post-terapia fonoaudiológica en grupo para pacientes disfónicos, y asociar la desventaja vocal post-terapia a las variables sexo, uso profesional de la voz y diagnóstico laringeo. **Material y métodos:** Es un estudio de intervención con 50 pacientes disfónicos, de ambos sexos, con un promedio de 45,43 años de edad. El Protocolo Índice de Desventaja Vocal (IDV) se aplicó en el primer y último encuentro de la intervención. La terapia se realizó en ocho encuentros semanales, siendo el enfoque el abordaje eclético. Se realizó la estadística descriptiva e inferencial con el test *t* de Student para comparar los momentos, y Chi-cuadrado para evaluar la asociación entre variables independientes con el IVD Total post-terapia. **Resultados:** La mayoría de los participantes eran mujeres y no hacían uso profesional de la voz. Hubo predominio de pacientes con diagnóstico de lesión en la porción membranosa del pliegue vocal. Comparando las subescalas del IVD en los momentos pre y post-terapia en grupo, se notó una reducción de las puntuaciones totales y de las subescalas emocionales y orgánicas del instrumento, sin embargo esa reducción no fué estadísticamente significativa. Asociando la puntuación total IVD post-terapia con las variables: sexo, uso profesional de la voz y diagnóstico laringeo, se observó significatividad en todas las asociaciones. **Conclusión:** No se redujeron significativamente los valores de las subescalas del IVD post-terapia en grupo. La reducción de estos se vio influenciada por el sexo, el uso profesional de la voz y el diagnóstico laringeo de los pacientes.

Palabras Clave: Voz; Disfonía; Autoevaluación; Logoterapia; Entrenamiento de la voz, Procesos de grupo.

Introdução

Voice is a part of the individuality of humans, for it allows expressing feelings and emotions, and thus interacting with each other. It is also a working tool for some people¹. Currently, the more intense and constant use of voice has become increasingly

common in a society that requires communication for interpersonal and professional relationships².

Thus, dysphonia is a common voice disorder, characterized by the presence of vocal symptoms due to an organic and/or functional change in it. The main symptoms are fatigue while speaking, throat clearing, hoarseness, burning sensation in the throat, voice failures, shortness of breath when talking, among others³.



A therapeutic intervention requires a thorough evaluation of the voice. This evaluation should be multidimensional, addressing laryngology and perceptual and acoustic analyses, which are performed by an ENT physician and a professional audiologist⁴.

In the clinical practice, laryngoscopic findings and the description of the vocal parameters from a perceptual and acoustic analysis are not sufficient to accurately measure dysphonia because they do not provide information about the patient's perception of the limitations imposed on its daily activities⁵.

Thus, self-assessment protocols have been developed to understand the perception that the patient has of its voice⁶. These instruments assess different aspects according to their objectives, including vocal symptoms⁷, quality of life⁵, voice handicap⁸, among others.

The Voice Handicap Index (VHI) is a validated self-assessment protocol aiming to evaluate the handicap caused by a spoken voice problem, measuring the impact of a voice problem on the life of an individual⁶.

Speech voice therapy plays a major role in improving vocal health and the quality of life of a dysphonia patient. This makes it the treatment of choice for dysphonia, especially behavioral dysphonia⁹.

One of the treatments is group speech therapy. This practice originated from Speech Therapy as a way of grouping the demand and supplying waiting lists. It is still used for this purpose on the grounds of lack of sufficient professionals in the health network. However, this motivation is gradually being overcome and the group is now regarded as an important space for exchanging ideas and cultural experiences and sharing knowledge. It is therefore a powerful form of intervention¹⁰.

In relation to the clinical outcome, group therapy seems promising. The group favors a more natural atmosphere of communication in everyday life, facilitates the learning of the motor skills of the techniques that may be more effective than just the presence of the speech therapist, and a patient may be a support to others upon sharing feelings and negative experiences. The group's environment may affect the response of the intervention¹¹.

The group provides a new view of the subject itself and of the other, thus decreasing isolation, weight and anxiety due to the disease around the subject and its family¹². In this context, group

speech therapy may be a facilitator and allow the (re)construction of representations and individual contents and the vocal images of each subject¹⁰.

Recent studies show that group therapy is effective in voice therapy sessions¹³. It is effective in reducing vocal risk factors¹⁴ and vocal symptoms¹⁵, maximizing strategies coping with dysphonia¹⁶, and minimizing emotional symptoms such as the anxiety of patients participating in this therapeutic modality¹⁷.

Still, many professionals raise questions regarding this type of intervention, so that group potentialities are not valued and exploited¹². Thus, there is a need for studies addressing this type of intervention, especially assessing its effectiveness.

The objective of this study was to evaluate vocal handicap pre and post group therapy for dysphonia patients, and investigate the influence of gender, age, professional use of voice, laryngeal diagnosis and number of absences in vocal handicap post-therapy.

Methods

This research is part of a larger project called "Group therapy x individual therapy: A randomized clinical trial for patients with voice disorders", with funding approved by the National Council of Technological and Scientific Development (CNPq), Universal Call No. 14/2013, Protocol no. 482337/2013-3.

The project was evaluated and approved by the Research Ethics Committee of the Health Sciences Center of a Higher Education Institution (HEI) under Protocol no. 383.061/2013.

Each volunteer was initially informed about the objectives and the procedures of the research. Those who agreed signed an Informed Consent in line with the CONEP Resolution no. 466/12.

This study is an explanatory field and quantitative research. It is an intervention study, i.e., it intends to observe the effects of a type of therapy on a population with dysphonia.

The participants in this study were patients with dysphonia from both genders, who voluntarily sought speech therapy at the Speech-language Pathology clinic of a HEI. In addition, volunteers met the eligibility criteria established for this study: diagnosis of dysphonia, 18 years or older, no previous history of speech therapy for speech disorders, a maximum of two absences in the



therapeutic process and no other co-morbidity affecting cognition, communication and voice.

Personal data such as gender, age, professional use of voice, laryngeal diagnosis, number of absences and vocal self-assessment were collected.

The instrument used for the self-assessment was the protocol Voice Handicap Index (VHI) validated for Brazilian Portuguese⁸ of the Voice Handicap Index (VHI)¹⁸. The VHI aims to observe the disadvantages that dysphonia may cause to the individual. It has 30 items distributed in three components: emotional, functional and organic. The total score, a simple sum, has a maximum of 120 points. The higher the result, the worse the disadvantage perceived by the individual⁸. A recent study found the cutoff value for disadvantage scores: 19 for total score, 10.5 for the organic component, 7.5 for the functional component and 3.0 for the emotional component⁷.

The protocol was applied by reading the items to the volunteers, and, when necessary, the terms were explained by the researcher. It is important

to note that, throughout the collection, the impartiality was kept so as not to influence the answer to the items.

It is believed that self-assessment is a key player within the perspective of multidimensional voice assessment. Thus, only data collected by the VHI protocol were considered in this study.

Each patient participated in eight weekly group therapy meetings, with an average duration of 90 minutes each, which amounted to about two months of therapy. In the first and last meetings (1st and 8th), the questionnaire was applied. Eight treatment groups were formed. Each had an average participation of six patients with similar socioeconomic characteristics, age group and job position. It is believed that, upon allocating people with similar characteristics, the group becomes more homogeneous and enables sharing similar experiences. This was done in order to create an image closer to their reality. Such intervention was managed by a speech therapist with the help of undergraduate Speech-language pathology students.

Figure 1. Description of the activities performed in group therapy with patients with voice disorders

Sessions	Activities
1st Meeting	Pre-therapy evaluation time. Application of the Voice Handicap Index (VHI) form
2nd Meeting	Presentation dynamics Guidelines: anatomy and physiology of voice production, voice in the life cycle Exercises: Breathing technique and maximum phonation time (MPT)
3rd Meeting	Guidelines: myths and truths about Voice Exercises: breathing, maximum phonation time, stretching/relaxation
4th Meeting	Guidelines: Vocal psychodynamic, Voice and emotion Exercises: Breathing technique, maximum phonation time, stretching/relaxation and semi-occluded vocal tract
5th Meeting	Guidelines: Phono-articulatory organs and Pneumo-phono-articulatory Coordination Exercises: Breathing technique, maximum phonation time, stretching/relaxation, semi-occluded vocal tract, movability of lips or tongue
6th Meeting	Guidelines: Laryngeal Diseases Exercises: Breathing technique, maximum phonation time, stretching/relaxation, semi-occluded vocal tract, movability of lips or tongue and resonance exercises
7th Meeting	Guidelines: Nonverbal communication and expressiveness Exercises: Breathing technique, maximum phonation time, stretching/relaxation, semi-occluded vocal tract, movability of lips or tongue, resonance exercises and overarticulation
8th Meeting	Post-therapy evaluation time. Application of the Voice Handicap Index (VHI) form

The therapeutic sessions addressed aspects of the eclectic therapy. There are three types of voice therapy approaches that can be used for vocal rehabilitation: direct therapy, emphasizing vocal techniques; indirect therapy, focused on advice and guidance on vocal hygiene care; and eclectic therapy, combining direct and indirect strategies^{19,20}. This study, therefore, involved direct and indirect therapy with the ultimate goal of an improved voice quality.

The proposed topics were fundamentals of anatomy and physiology of vocal production, vocal health, vocal, voice and emotion psychodynamics, information about laryngeal diseases (according to the group's demand), nonverbal communication and expressiveness. In order to address the topics, it was proposed that the group should prepare educational materials and take part in experiences/collective dynamics from the execution of speech therapy techniques aimed to benefit the voice. The activities, topics and exercises of the group are described in Table 1.

It is important to mention that if the patient did not achieve the planned objectives in accordance with its complaints and vocal quality, it was forwarded to individual and traditional care under the responsibility of the Department of Voice at the Center for Speech Therapy of a HEI to achieve speech therapy discharge.

Data were entered into a spreadsheet in Microsoft Excel 2010, constituting the database that met the demands of this research.

A descriptive statistical analysis was initially performed in order to verify the frequency, mean and standard deviation of the variables.

Subsequently, an inferential statistical analysis was performed using appropriate tests: parametric Student t test with paired data to compare time

Table 1. Distribution of gender, professional voice use and laryngeal diagnosis of patients undergoing group therapy

Variable	n	Percentage
Gender		
Female	39	78,0
Male	11	22,0
Professional voice use		
No	32	64,0
Yes	18	36,0
Laryngeal diagnosis		
Lesion on the membranous portion of the vocal fold	19	38,0
Undifferentiated diagnosis	11	22,0
Absence of laryngeal lesion	7	14,0
Voice disorders secondary to a gastroesophageal reflux	6	12,0
Glottic chink with no organic or neurological cause	6	12,0
Others	1	2,0

before and after therapy; Spearman's correlation test to verify the degree of relation between pairs of variables such as voice handicap x age, vocal handicap x number of absences in the therapeutic process; Chi-square test to verify the association between vocal handicap x gender, vocal handicap x laryngeal diagnosis and voice handicap x professional use of voice.

It is important to mention that the laryngeal diagnosis of patients was performed by an ENT doctor. Only for statistical analysis purposes and not as a division criterion of therapeutic groups, the variable "laryngeal diagnosis" was categorized into five possibilities: absence of laryngeal lesion, glottal clefts without organic or neurological cause, lesion in the membranous portion of the vocal folds (nodules, polyps and cysts), voice disorders secondary to a gastroesophageal reflux²¹ and undetermined laryngeal diagnosis.

Differences were considered significant when the $p < 0.05$. The statistical analysis was performed using the software Statistical Package for Social Sciences (SPSS) version 20.0.

Results

The study included 50 patients with dysphonia from both genders, with a mean age of 45.43 (± 15.60) years and a mean of 1.12 (± 0.90) regarding absence in group therapy sessions.

Table 1 shows the characterization of the participants and the variables gender, professional use of voice and laryngeal diagnosis. There was a predominance of women: 78% (n=39) were women and 22% (n=11) were men. Most participants (64%; n=32) did not use the voice professionally. In the laryngeal diagnosis, there is a predominance (38%; n=19) of lesion in the membranous portion of the vocal fold.

It is observed that there was no statistical difference when comparing the data of the group pre and post-therapy in the total scores and components of the VHI protocol (Table 2).

Table 2. Mean, standard deviation and significance of voice handicap index of patients before and after group therapy

Variable	Pre-therapy		Post-therapy		p-value
	Mean	Standard Deviation	Mean	Standard Deviation	
VHI Total	44,44	31,143	42,06	30,605	0,392
VHI Emotional	12,68	12,227	11,92	11,553	0,503
VHI Functional	11,80	10,835	12,08	10,934	0,754
VHI Organic	19,04	9,864	18,06	10,229	0,321

Legend: VHI= Voice Handicap Index. Paired Student's t test

Table 3 shows the association between VHI total score post group therapy with the variables gender, professional use of voice and laryngeal diagnosis. It was verified that there was a significance in all independent variables, i.e., gender ($p<0.001$), professional use of voice ($p=0.048$) and diagnosis ($p<0.001$).

Table 3. Association of VHI total score after group therapy with the variables gender, professional voice use and laryngeal diagnosis of patients undergoing group therapy.

Dependent variables	Independent variables	Significance (p)
VHI Total Post-therapy	Gender	<0,001*
	Professional voice use	0,048*
	Laryngeal diagnosis	<0,001*

Legend: VHI= Voice Handicap Index. Chi-squared test. * $p<0.05$.

It is important to mention that there was no significant correlation between the components of VHI post-group therapy with the variables number of absences and patient age.

Discussion

It is known that dysphonia may cause significant impacts on an individual's well-being, affecting its daily activities and quality of life²². This factor motivates the demand for speech therapy, which aims to prevent, evaluate and rehabilitate individual dysphonia.

Most participants were women. This can be identified in other studies^{4,23}. Such studies state that women are two times more likely to develop dysphonia than men, which corresponds to 76% of clinical referrals regarding voice.

A study²⁴ found that women report significantly more vocal problems than men, which can be explained due to the anatomical and physiological differences of the larynx. Moreover, it is noteworthy that social and cultural aspects, expressed by the possible specificities and overloads in the female social role, may also contribute to the development of voice disorders among women, whereas dysphonia may occur as a result of an interaction among several factors, among them lifestyle and occupational issues.

Some of the participants in this study used their voice professionally, which is consistent with the literature², which reaffirms that voice is a working tool used professionally by much of the active population. A prolonged inappropriate use of voice has negative consequences to the individual. Yet,



most of the subjects studied did not use the voice professionally, evidencing that the demand for specific voice-related speech therapy services is also not restricted to a voice professional. The care with this instrument goes far beyond profession, because it directly affects the quality of life and the vocal health of the individual, causing restrictions to the act of communicating²¹.

It was found that most patients presented a diagnosis related to behavioral dysphonia. The lesion in the membranous portion of the vocal fold is more prevalent. According to the literature, the mechanical presence of the lesion makes it difficult to approach the vocal folds in the closed phase of the glottal cycle, and causes an increased vocal effort and roughness²⁵. Thus, it creates a greater sensory and auditory unpleasant feeling, motivating attendance to speech therapy sessions.

No statistical difference, when comparing the data of the group pre and post-therapy, were observed for the total scores and components of the VHI protocol. This result can be explained by the fact that, during pre-treatment, patients, despite reporting many symptoms related to dysphonia, had a limited knowledge about the care needed to maintain vocal health. Another hypothesis is that the six-session time or the therapeutic strategies proposed by this study may have been insufficient to reduce the disadvantages of patients with vocal dysphonia. However, the same method employed was effective to reduce vocal risk factors¹⁴ and vocal symptoms¹⁵, increase coping strategies regarding dysphonia¹⁶, and reduce the anxiety of patients undergoing group therapy¹⁷.

It could be observed that patients demonstrated more knowledge about voice and dysphonia and a better evolution in the perception of their voice and symptoms during group therapy. Thus, it is believed that this factor was decisive to a lower VHI response, though not statistically significant.

The characteristics of the group also became an important issue, considering that vocal problems can be addressed in different ways in accordance with this profile. With voice professionals, for example, vocal problems have a meaning different from those who did not use the voice for a living²⁶. Studies^{22,27} with voice professionals found that they have a better perception of voice quality, making post-therapy results reach a statistical significance because, as simple or small as it may be, changes affect this population greatly.

Communication plays a relevant role for voice professionals and also makes them more exposed to the risk of developing a voice problem. In this study, it was found that there is a significant association between the professional use of voice and the results of the VHI post-therapy. This may indicate that voice professionals are more likely to reduce post-treatment voice handicap than those who are not voice professionals. This result was also observed in another study²⁸, which studied the impact of dysphonia associated with age, gender and professional use of voice.

In the laryngeal diagnosis, there was significance suggesting that patients with behavioral dysphonia are more prone to changes in voice handicap than others, with better results after group therapy. Thus, it is known that behavioral dysphonia is related to exposure to vocal risk factors and vocal behavior in general, a fact that requires the active participation of the patient in the rehabilitation process¹¹.

It was observed that there was no significant correlation between the components of the VHI post-group therapy and the variables number of absences and patient age. In another study²⁸, it was observed that younger individuals perceived a greater impact related to the quality of life in voice.

Like any group process, group therapy has potentials and limitations¹⁰. Then, it is relevant to address some issues and limitations of this study. At first, participants expressed an interest in joining the group in order to reduce their vocal complaints. However, throughout the therapeutic process, they began to report unavailability of time due to excess of commitments, which prevented them from attending all meetings.

This behavior was also observed in a study²⁹ on a vocal advisory group with teachers, suggesting that vocal complaints were probably not evaluated by them with a sufficient degree of severity to motivate them to participate. These data show that, despite the appearance of vocal symptoms and their negative consequences to the quality of life of the patient, the individual was not always collaborative, i.e., adhesion to speech therapy is not immediate³⁰.

However, given the frantic pace and the constant commitments of the current society, committing eight days to a therapy group may have seemed too long for some patients, that is, it was inconsistent with their daily demands. However, this issue should be addressed. It is known that

specific and isolated voice actions may not be sufficient to promote behavioral and considerable vocal changes on individuals. It is necessary to engage in a therapeutic process^{27,29} as that described in this work.

However, it is necessary to consider that the low number of sessions proposed in this study may also have been insufficient to cover the diversity of diagnoses reported by participants and generate significant changes in vocal quality and behavior.

It is important to conduct further studies on this topic using the VHI and other assessment tools to measure the therapeutic effectiveness by testing approaches and different modalities or an assessment of other vocal aspects.

Conclusion

It can be concluded that there was no significant decrease in the values of the VHI components post group therapy. The decrease in these values was shown to be influenced by gender, professional use of voice and laryngeal diagnosis of patients.

It is believed that group therapy favored learning about voice and dysphonia and improved the vocal self-perception of the participants. Thus, it may have enabled patients to better respond to the VHI.

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